

If an existing subscriber, for example identified by way of the following parameters (MSISDN<sub>A</sub>, IMSI<sub>A</sub>, KI<sub>A</sub>) seeks a SIM card replacement and at the same time wishes to retain his old mobile number, the new card details (say IMSI<sub>B</sub>, KI<sub>B</sub>) have to be assigned to his old number (MSISDN<sub>A</sub>).

- 5 Currently, re-assignment of old mobile number to a new SIM card is a cumbersome process involving manual intervention & processes on the part of the GSM operator. These manual processes imply wastage of effort, time and money. For the end user, the present process is inconvenient, as several manual checks have to be applied.
- 10 International patent application published under number WO 02/13564 describes a method for simplifying the exchange of a SIM card of subscribers of a digital mobile communication networks. The subscriber disposes of an old active SIM card and of a new inactive SIM card for use in a mobile terminal. The proper activation of the new SIM card and deactivation of the old SIM card are
- 15 carried out while in dialog with the subscriber via a migration server connected to the mobile communications network.

### Summary of the Invention

- 20 The proposed solution seeks to facilitate retention of old number in case of SIM card replacement.

- According to one aspect of the invention, a method for managing phone numbers attribution after replacement of a first portable object (SCA) by a second portable object (SCB), the first portable object (SCA) being coupled to a
- 25 communication device (CD) arranged to communicate with a network, the first portable object (SCA) comprising a first identification data (IMSI<sub>A</sub>, ADM<sub>A</sub>, KI<sub>A</sub>) identifying a first current phone number (MSISDN<sub>A</sub>), comprises the following steps:

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- a first sending step, in which the communication device (CD) sends to an application server (AS) a message including a second identification data identifying a second phone number (MSISDN<sub>B</sub>) assigned to the second portable object (SCB) ;
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- a service-inserting step, in which the second portable object (SCB) is inserted in the communication device (CD), the second portable object (SCB) comprising a second identification data (IMSI<sub>B</sub>, ADM<sub>B</sub>, Ki<sub>B</sub>) identifying the second phone number (MSISDN<sub>B</sub>); and
- 10-
- a second sending step, in which an application server (AS) sends a message (M2) for replacing, in the second portable object (SCB), the second identification data (IMSI<sub>B</sub>, ADM<sub>B</sub>, Ki<sub>B</sub>) by the first identification data (IMSI<sub>A</sub>, ADM<sub>A</sub>, Ki<sub>A</sub>).
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- With the invention, when the new card is inserted in the communication device, the new parameters attached to the new card are deleted/deactivated and replaced by the old parameters attached to the old card. So, we see that a user can keep his old phone number by way of a simple process.

## In the Drawings

Figure 1 is a diagrammatic view of the architecture to which the invention can be applied.

- 5 Figure 2 illustrates the communication between the card to be replaced and the application server.

Figure 3 illustrates the communication between the new card and the application server.

## 10 Description of an example illustrating the invention

Figure 1 represents an example of a system to which the invention can be applied.

- 15 In our example, the system comprises the following elements:

- a card SCA
- a card SCB
- an application server AS.

- 20 In our example, initially, the card SCA is coupled to a mobile phone MOB. The mobile phone communicates with the application server AS by way of a network RES. In our example, the application server AS communicates with network elements NLT (HLR, AuC, Billing System, etc.).

- 25 In our example, the network RES is a GSM network. This example is not limitative; in another embodiment, for example if the communication device is a point of sale, the network could be Internet or a direct phone line.

In our example, a subscriber wishes to replace his SIM card SCA (with IMSI<sub>A</sub>, Ki<sub>A</sub> assigned to MSISDN<sub>A</sub>). The subscriber purchases (or is given by the

**Claims**

- 1) A method for managing phone numbers attribution after replacement of a first portable object (SCA) by a second portable object (SCB), the first portable object (SCA) being coupled to a communication device (CD) arranged to communicate with a network, the first portable object (SCA) comprising a first identification data (IMSI<sub>A</sub>, ADM<sub>A</sub>, Ki<sub>A</sub>) identifying a first phone number (MSISDN<sub>A</sub>), wherein the method comprises the following steps:
- a first sending step, in which the communication device (CD) sends to an application server (AS) a message including a second identification data identifying a second phone number (MSISDN<sub>B</sub>) assigned to the second portable object (SCB) ;
  - an inserting step, in which the second portable object (SCB) is inserted in the communication device (CD), the second portable object (SCB) comprising a second identification data (IMSI<sub>B</sub>, ADM<sub>B</sub>, Ki<sub>B</sub>) identifying the second phone number (MSISDN<sub>B</sub>); and
  - a second sending step, in which an application server (AS) sends a message (M2) for replacing, in the second portable object (SCB), the second identification data (IMSI<sub>B</sub>, ADM<sub>B</sub>, Ki<sub>B</sub>) by the first identification data (IMSI<sub>A</sub>, ADM<sub>A</sub>, Ki<sub>A</sub>) .
- 2) The method according to claim 1, wherein the method further comprises a using step, in which a user uses the second portable object (SCB) with the first phone number (MSISDN<sub>A</sub>).

- 3) The method according to claim 1, wherein before the first sending step, the application server (AS) sends a secure message (step 3) for deleting, in the first portable object (SCA), the first identification data (IMSI<sub>A</sub>, ADM<sub>A</sub>, Ki<sub>A</sub>).
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- 4) The method according to claim 3, wherein the secure message (M3) is encrypted, the encryption being performed by using an encryption key attached to the portable object (SCA), and by using an algorithm that resides both on the Application Server (AS), and on the portable object (SCA).
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- 5) The method according to claim 1, wherein in the second sending step, the application server (AS) sends a secure message.
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- 6) The method according to claim 5, wherein the secure message is encrypted, the encryption being performed by using an encryption key attached to the second portable object (SCB), and by using an algorithm that resides both on the Application Server (AS), and on the second portable object (SCB).
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- 7) The method according to claim 2, wherein in the using step, the communication device (CD) communicates with the network using the second portable object (SCB), the first phone number (MSISDN<sub>A</sub>) and the first identification data (IMSI<sub>A</sub>, ADM<sub>A</sub>, Ki<sub>A</sub>).
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- 8) An application server (AS) arranged to communicate with a communication device (CD), the communication device (CD) being coupled to a first portable object (SCA), the first portable object comprising a first identification data (IMSI<sub>A</sub>, ADM<sub>A</sub>, Ki<sub>A</sub>) identifying a first phone number (MSISDN<sub>A</sub>), the application server storing the first identification data
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( $IMSI_A$ ,  $ADM_A$ ,  $Ki_A$ ) wherein the application server comprises a computer program arranged to perform the following steps:

- 5                   a. a receiving step, in which the application server receives from the communication device, a message including second identifying data identifying a second phone number ( $MSISDN_B$ ) assigned to a second portable object (SCB); and, after the second portable object has been coupled to the communication device
- 10                  b. a sending step, in which the application server (AS) sends, a message (M2) for replacing, in the second portable object (SCB), the second identification data ( $IMSI_B$ ,  $ADM_B$ ,  $Ki_B$ ) by the first identification data ( $IMSI_A$ ,  $ADM_A$ ,  $Ki_A$ );
- 15           9) A portable object (SCB) comprising first identification data ( $IMSI_B$ ,  $ADM_B$ ,  $Ki_B$ ) identifying a first phone number ( $MSISDN_B$ ), the portable object being arranged to be coupled to a communication device (CD). the communication device (CD) being arranged to communicate with an application server via a communication network, the application server
- 20           storing second identification data ( $IMSI_A$ ,  $ADM_A$ ,  $Ki_A$ ) identifying a second phone number ( $MSISDN_A$ ), wherein the portable object comprises a microcontroller including a program arranged to perform a receiving step in which the microcontroller is arranged to receive a request from the application server for replacing the first identification data ( $IMSI_B$ ,  $ADM_B$ ,  $Ki_B$ ) by the second identification data ( $IMSI_A$ ,  $ADM_A$ ,  $Ki_A$ ).
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- 5 10) A communication device (CD) being arranged to be coupled to a first portable object (SCA), the communication device (CD) being arranged to communicate with an application server via a communication network, the portable object (SCA) comprising first identification data (IMSI<sub>A</sub>, ADM<sub>A</sub>, Ki<sub>A</sub>) identifying a first phone number (MSISDN<sub>A</sub>), wherein the communication device (CD) is arranged to send to the application server a message comprising a second identifying data identifying a second phone number (MSISDN<sub>B</sub>) assigned to a second portable object (SCB).